

Conceptual Mitigation Plan

***345, 375 Mine Hill Road
Issaquah, Washington***

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1.0 INTRODUCTION

This Conceptual Mitigation Plan has been prepared to identify proposed impacts to critical areas and describe compensatory mitigation requirements for a proposed development of a 4.9-acre property into 20 lots, entry roads, supporting utilities and a stormwater facility. This study includes Parcel # 3324069039 and 3324069036, located at 345 and 375 Mine Hill Road in Issaquah, Washington (**Figure 1**). This report has been prepared for submittal to the City of Issaquah according to the Issaquah Municipal Code (IMC), Chapter 18.10.

2.0 EXISTING CONDITIONS and CRITICAL AREAS

The subject property is partially developed with Mine Hill Creek flowing in a north-south direction through the property. There are two houses on the east side of the creek that are accessed from Mine Hill Road. There is an additional abandoned house in disrepair west of Mine Hill Creek that is accessed through a driveway roughly parallel to the creek that connects to the northern end of Mine Hill Road. All the houses have associated areas of landscaping and lawns; the remainder of the property is forested.

Mine Hill Creek and a wetland were delineated on the property and described in a report prepared by Aquatica Environmental Consulting, LLC, dated October 23, 2018 and subsequently approved by the City. An additional small isolated seep/stream was identified following the City's peer review of the property, which was subsequently delineated as Stream B. These features are summarized below.

Mine Hill Creek

Mine Hill Creek flows through these parcels, which is classified by the City as a Class 2 stream without salmonids. The IMC 18.10.780(C) requires a buffer setback of 75 feet for Class 2 streams. An additional building setback of 15 feet is required from the edge of stream buffers. Vegetation along the stream banks includes a mix of invasive plants such as Japanese knotweed (*Polygonum cuspidatum*), Armenian blackberry (*Rubus armeniacus*) and native plants including salmonberry (*Rubus spectabilis*) and red alder (*Alnus rubra*). The distance between the ordinary high-water marks of the stream is about ten feet, substrate material includes a mix of gravel, cobbles, and exposed bedrock. Stream habitat includes a mix of pools and riffles. The stream exits the subject properties in the northeastern corner of Parcel -039 and flows through an approximately 200-foot long culvert before discharging in Issaquah Creek. The WDFW has mapped this culvert as a complete physical barrier to fish access upstream (WDFW 2016), as a result, salmonids are not currently able to access the on-site portion of Mine Hill Creek.

Stream B

Stream B is a small ephemeral intermittent section of stream channel about thirty feet long and about twelve inches wide. There was evidence of surface water flow, although it is minimal. It has a sandy substrate with sparse vegetation and a depth of an inch or two. This feature is in a topographic depression and it may receive water from groundwater seeps and/or from surface runoff from the adjacent forest. Stream B does not connect any other wetlands or streams and its flows infiltrate. Stream B is classified as a Class 4 stream with a 25-foot buffer.

Wetland A

Wetland A is a palustrine, saturated wetland located on a slope adjacent to Mine Creek. The wetland is supported by hillside seeps; the edge of the wetland adjacent to Mine Creek may receive some hydrologic support through stream flows, although most of the wetland is above the stream on the slope. The wetland supports a mix of native and non-native vegetation including areas of dense Armenian blackberry (*Rubus armeniacus*), red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), lady fern (*Athyrium filix-femina*), skunk cabbage (*Lysichiton americanus*) and piggy-back plant (*Tolmie menziesii*). The wetland buffer includes a mix of native and non-native vegetation including blackberry and English ivy (*Hedera helix*). Conifer trees such as Douglas fir (*Pseudotsuga menziesii*), Western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*) are also present in the buffer. This wetland was categorized as a Category III wetland with a habitat score of 6 points. Category III wetlands with a habitat score of 6 points require a 75-foot buffer (IMC 18.10.640). An additional building setback of 15 feet is also required from the edge of wetland buffers.

3.0 PROPOSED PROJECT and ENVIRONMENTAL SEQUENCING

The applicant is proposing to develop the area west of Mine Hill Creek and Wetland A with twenty residential lots, access roads, utilities, and stormwater facilities. The abandoned house that partially is in the Wetland A buffer will be removed and the existing access driveway to this house will be converted to a trail and utilities installed adjacent to this path. Proposed impacts include averaging the buffers of Mine Hill Creek and Stream B, averaging the Wetland A buffer, and temporary buffer impacts for installing utilities adjacent to the existing access driveway, stormwater outfall pipe installation and converting the existing driveway to a trail. Three lots are proposed east of Mine Creek, where there are two existing houses in the buffer that represent nonconformances. Through the proposed buffer averaging plan one of the existing homes will be created on a new lot outside of the buffer. The remaining house will be allowed to remain although future reconstruction of this home will occur on one of the new lots created through buffer averaging.

The IMC 18.10.490(A(1-5)) requires that impacts to critical areas follow mitigation sequencing to avoid, minimize and mitigate and monitor project impacts. The applicant evaluated several development scenarios in consultation with the City and settled on a proposed site design that avoided the critical areas or minimized impacts to the critical areas to the greatest extent feasible. Most importantly, buffer impacts were avoided and minimized through the proposed access to the development which is through an undeveloped right of way connecting to Clark Street to the north, instead of coming from Mine Hill Road. A Mine Hill Road entrance to the project would have resulted in a road through the Wetland A and Mine Hill Creek buffers, which would have resulted in more impacts to stream and wetland buffers.

The proposed impacts to critical areas that could not be otherwise avoided, include:

- The configuration of Lots 4 and 5 and the road adjacent to Stream B will require that the Stream B buffer be averaged. The prior site plan proposed filling Stream B, the project has been redesigned to avoid and preserve Stream B channel.
- Two stormwater outfalls are proposed in the buffers of Mine Hill Creek. The outfall locations cannot be located in the outer buffer due to the steep slopes, as discharging

water at the top of or on the steep slopes could cause erosion or slope instability. There was no other location that was feasible for the outfall location adjacent to Mine Hill Road, as the existing road is already in the buffer and the City is requiring road improvements in this location.

- The stormwater detention vault is impacting the Wetland A buffer and was not avoidable due to the topography of the site and the required outfall location.
- Utility installation is proposed to occur in the wetland and stream buffer. It was not possible to avoid this impact due to the unique topography of the site, and the location of existing public water and sewer mains where utilities serving the plat must connect. The proposed location also was minimized by placing them adjacent to the existing access road and proposed trail to minimize and avoid disturbance to the undisturbed steeper slopes further upslope.
- Mitigation and monitoring will be provided for project impacts and is detailed in **Section 6.0** and the proposed plans.

4.0 PROJECT IMPACTS AND IMC REQUIREMENTS

Project impacts are summarized below by type of impact with a narrative of how these impacts comply with the IMC. Project impacts include buffer and stream averaging, temporary impacts for utilities and a stormwater outfall in the buffer, and conversion of a road into a pervious trail surface.

4.1 Wetland and Stream Buffer Averaging and Impervious Surface Credit

Stream and wetland buffer impacts are proposed and mitigation for these impacts is proposed through buffer averaging and buffer reduction through removing impervious surfaces. The IMC allows wetland and stream buffers to be reduced at a 1:1 ratio with removal of existing, legally non-conforming impervious surfaces if the impervious surface removal area is closer to the wetland or stream than the reduction area (IMC 18.10.650(D)(4) and 18.10.790(D)(5)). The project is removing the existing house, a portion of which (835 sf) is in the wetland buffer. The reduction area, near the stormwater vault, is sixty feet from the wetland edge, while the house removal area is only 37 feet away, meeting the requirement for the impervious surface removal area to be further away. The project is proposing to remove 1,211 sf of impervious surfaces in the southeastern stream buffer that is between 43 and 49 feet from the stream at their closest points. Stream reduction areas are further away, a minimum of 56 feet, except for the road improvements and stormwater utilities adjacent to Mine Hill Road. As discussed below, due to the proximity of the stream and existing roadway, there is no other locations for these improvements and a variance is being requested (Appendix A). The remaining buffer reduction areas are being mitigated for through buffer averaging replacement. The following table summarizes these impacts. As required by buffer averaging, there is an equivalent reduction and replacement area, and the remaining areas are mitigated through removing impervious surfaces at a minimum of a 1:1 ratio.

Table 1.0 Buffer Averaging and Impervious Surface Removal Summary

	Reduction	Replacement	Impervious Surface Credit	Net Change
Stream Buffer	-4,529	+3,457	+1,211	+139
Wetland Buffer	-1,548	+721	+835	+8
Stream and Wetland Buffer (Trail Impacts)	-2,062	0	+1,979	-83
Total	-8,139	+4,178	+4,025	+64

Wetland and Stream Buffer Averaging Requirements:

The standard wetland and stream buffer widths may be averaged when the following criteria are met:

- (a) The proposed site plan demonstrates efforts to avoid and minimize wetland and stream buffer impacts;**

As described above, the project has used environmental sequencing to avoid and minimize wetland and stream impacts. The reduction area adjacent to the stormwater vault was required to meet open space requirements as well as grading for the stormwater tract and is in this location due to the topography of the site and the locations of steep slopes and buffers.

- (b) Buffer width averaging is consistent with the best available science and will not adversely impact wetland or stream functions and values.**

*Most of the reduction area is occurring in the existing lawn area of the house that is proposed for removal and is currently covered with junk and debris and will be impacted through grading and utility installation. Through implementation of proposed enhancement, the area will have an increase in functions and values as described in the Functional Value assessment in **Section 5.0**.*

- (c) The total area within the wetland and stream buffer is not less than the area within the standard buffer prior to averaging. The**

location of the replacement buffer shall be contiguous to the standard buffer.

There is a slight net gain (64 sf) of buffer after buffer averaging. The replacement buffer is contiguous with the wetland.

(d) The buffer width shall not be reduced by more than 25% of the standard buffer width at any location.

This requirement has been met for wetlands. A 25% reduction of the wetland buffer is 56.25 feet. The narrowest wetland buffer reduction width is 59 feet. A variance is requested for the stream buffer reduction area associated with Mine Hill Road frontage improvements. These are required by the City and in this location because the existing road is in the stream buffer. Variance requirements are included in Appendix A.

(e) A maximum of 50% of the buffer perimeter on a site may be reduced by buffer averaging.

The project meets this requirement and is reducing about 25% of the wetland buffer perimeter in the vicinity of the stormwater vault with buffer averaging. Approximate 25% of the stream buffer perimeter is averaged, with all the stream buffer averaging reduction occurring on the southeast side of Mine Hill Creek.

(f) Buffer averaging shall consider physical characteristics on a site, including but not limited to existing buffer vegetation, slopes, floodplain hydrology, surface drainage, and association with nearby wetlands and/or streams.

Physical considerations of the site were evaluated for the buffer averaging proposal. Additional buffer is being replaced adjacent to the restoration area of the house that is being removed in the buffer, to create a contiguous area of restoration that is contiguous with the Mine Creek buffers and in close proximity to Stream B. Southeast of Mine Hill Creek, buffer averaging is utilized as noted above for frontage improvements.

Additionally, the buffer averaging proposal has been created to allow for the future reconstruction of one of the houses outside of the stream buffer that is presently inside the buffer. It also has been utilized to ensure that the other existing house will be outside the stream buffer.

(g) Buffer averaging credit shall not be allowed in areas already protected by the critical area regulations.

Credit is not proposed in areas already protected by critical areas regulations.

(h) Mitigation, such as revegetation and enhancement of existing vegetation, may be required by the Director.

A mitigation plan is included to address restoration of impervious surface removal areas and most of the remaining buffer areas which are degraded with an abundance of non-native invasive vegetation.

4.2 Performance Standards For Development Adjacent to Wetlands

The following performance standards, as required by IMC 18.10.660 have been incorporated into the mitigation plan. These standards are in bold text, how they will be addressed is in italicized text.

A. Lights shall be directed away from the wetland. Lighting levels shall meet the outdoor lighting standards for spillover into critical areas, per IMC 18.07.107.

Most of the development roadways where car lights could shine into the wetland are not located adjacent to the buffer, the only adjacent road is limited to the terminus of Road A. The buffer edge will be planted with evergreen trees in this location to mitigate for potential light intrusion. Other development on the site adjacent to the wetland buffer includes a stormwater tract and the back yards of the houses. The project will adhere to the outdoor lighting standards per IMC 18.07.107.

B. Activities that generate noise shall be located away from the wetland, or noise impacts shall be minimized through design or insulation techniques.

As noted under Item A above, like the light issue, most of the roadways are not located adjacent to the wetland which will minimize noise, and the stormwater tract has also been located adjacent to the wetland to limit activities that limit noise.

C. Toxic runoff from new impervious surface area shall be directed away from wetlands.

Runoff from impervious surfaces will be directed to the stormwater vault and treated before release.

D. Treated stormwater runoff may be allowed into wetland buffers. Channelized flow should be prevented.

Stormwater runoff is not proposed to be released into wetland buffers.

E. Use of pesticides, insecticides, and fertilizers within one hundred fifty (150) feet of wetland boundaries shall be limited and follow best management practices (BMPs).

There will be a covenant in the HOA that prohibits the use of synthetic fertilizers for the development and restricts the use of insecticides or pesticides to only when there are no other feasible options and human safety, or the integrity of a structure is at risk.

F. The outer edge of the wetland buffer shall be planted with dense vegetation and/or fencing to limit pet and human disturbance. (Ord. 2455 § 10, 2006; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.11, 1996).

There will be a fence and dense buffer plantings along the edge of the wetland and stream buffer.

4.3 Utility Impacts

The project is proposing to install utilities adjacent to the existing access road and construct stormwater discharges/install a pipe in the wetland/stream buffers resulting in 6,199 sf of temporary wetland and stream buffer impacts. Surface water discharge is allowed in wetland buffers per IMC 18.10.610(B)(4) if the discharge does not increase the rate of flow, change the plant composition, or decrease the water quality of the wetland. The discharge point will be north of the wetland and will not affect the hydrology of the slope wetland. The area will be restored after installation to repair impacts to buffer vegetation. Surface water discharges are allowed to streams per IMC 18.10.775(E)(1) when there is no feasible alternative and the discharge complies with the City's Stormwater Design Manual. The project is meeting Stormwater Design Manual Requirements.

Utilities are allowed in stream buffers (IMC 18.10.775(F)) and wetland buffers (IMC 18.10.610(C)) when an alternative location is not feasible. Following are the code requirements in bold with how the project is meeting them in italicized text.

18.10.775 (F) 1. Utility Construction: Construction of utilities shall be permitted in the outermost twenty-five (25) percent of a stream buffer only when it has been determined through Level 1 Review or through the appropriate land use permitting process that:

a. No practical alternative location is available; and

It was determined that following the alignment of the existing access road was the most feasible and least environmentally damaging location for utilities. This results in utilities being accessible via the existing road to be converted to a trail, minimizes new disturbance due to easy access via the existing road, and avoids the steeper forested slopes in the outer part of the buffer. This code section restricts utilities to the outermost 25% of the buffer. This proposal does not meet this requirement and a variance is requested. Variance criteria are addressed in Appendix A.

b. The utility corridor meets the criteria set forth in the applicable City ordinance including, but not limited to, requirements for installation, replacement of vegetation, and maintenance; and

The project will meet all City installation requirements for vegetation and maintenance. A conceptual mitigation plan is also provided for these impacts.

c. Impacts to the buffer area are minimized and restoration is implemented to the greatest extent feasible; and

Impacts will be minimized to the impact area shown on Figure 3 by using shoring equipment if needed and equipment that allows for utility construction in a confined area to limit impacts. A conceptual mitigation plan has been developed for the restoration of the impact area. Impacts were minimized by proposing the installation to occur adjacent to existing disturbance (the existing access road).

d. The requirements for sewer utility corridors in IMC 18.10.610(C) shall also apply to stream buffers.

These requirements follow:

18.10.610(C). Utilities in Wetland Buffers: Sewer utility corridors may be allowed in wetland buffers only if the applicant demonstrates that sewer lines are necessary for gravity flow and no other technologically practical alternative exists, and:

1. The corridor is not located in a wetland or buffer used by species listed as endangered or threatened by the state or federal government or containing critical or outstanding actual habitat of those species, and consider construction timing in areas with heron rookeries or raptor nesting trees;

There are no endangered or threatened species in the wetland or buffer, nor is there critical or outstanding habitat of any of these species.

2. The corridor alignment including, but not limited to, any allowed maintenance roads shall not encroach into the wetland buffer at any location by more than twenty-five (25) percent of the standard wetland buffer width, per IMC 18.10.640;

The proposed location rationale is explained above under Item 1(a), above. The proposal does not meet the requirement to restrict sewer utilities to the outer 25% of the buffer, as it was determined the proposed location is the least impactful due to existing disturbance and a variance is requested. Variance criteria are addressed in Appendix A.

3. Corridor construction and maintenance protects the wetland and buffer and is aligned to avoid cutting trees greater than twelve (12) inches in diameter at breast height, when practical.

Trees have been avoided when practical, but several trees, as shown on the attached plans, are proposed for removal so that the utilities can follow the existing alignment of the access road.

4. An additional, contiguous, band undisturbed buffer, equal in width to the proposed nonvegetated areas, including any allowed maintenance roads, is provided to protect the wetland.

No additional buffer is proposed for a maintenance road as the alignment follows an existing trail.

5. The corridor is revegetated with appropriate vegetation native to King County at preconstruction densities or greater immediately upon completion of construction or as soon thereafter as possible, and the sewer utility ensures that such vegetation is established for at least five (5) years;

A mitigation plan is proposed that revegetates the area with native vegetation and provides for five years of post-construction monitoring.

6. Any additional corridor access for maintenance is provided, to the extent possible at specific points rather than by a parallel road; and

An existing access road is located along the corridor which will be converted to a trail. This may be used for maintenance if needed.

7. The width of any necessary parallel road providing access for maintenance is as small as possible, but not greater than fifteen (15) feet, and the location of the road is within the utility corridor on the side away from the wetland.

The proposed adjacent trail is six feet wide and is in the location of existing disturbance.

4.4 Trail Impacts

The applicant is proposing to convert the existing access road, which is in a wetland and stream buffer, into a trail. The IMC 18.10.610 (B)(5) allows for the development of public and private trails, provided that these result in minimal impact and a critical area study shows no net loss of buffer functions and values and the trail width is added to the wetland buffer. A Functional Value Assessment is provided in **Section 5.0**. This trail is being built where there is existing development, on the location of the existing access road to the abandoned house west of Mine Hill Creek. The IMC states that the buffer area used for the trail “should be replaced by adding an equal area to the buffer. Where existing development prevents addition the replacement buffer, other mitigation measures shall be required to ensure no net loss of buffer functions and values”. The project is proposing to convert the existing road to a trail. Mitigation for this trail is proposed by removing 1,979 sf of existing impervious surfaces (the existing road) and replacing it with a pervious trail surface (2,062 sf). The additional 83 square footage is mitigated for by buffer averaging replacement.

5.0 FUNCTIONAL VALUE ASSESSMENT

A site-specific functional analysis is required to demonstrate functional equivalency and is summarized below. Primary functions of wetlands and stream and wetland buffers include water quality maintenance, stormwater storage, wildlife habitat, and social functions. The proposed project addresses these functions. The on-site buffers are substantially degraded. Permanent buffer impacts are proposed in areas of existing disturbance and degraded vegetation and the remaining adjacent buffer areas will be restored. All temporary impacts will be restored. Details regarding how the project will improve these functions are described/and or referenced below.

a). Water Quality Functions. The project is expected to improve the water quality maintenance functions of the buffers and wetland. Water quality maintenance on this site occurs through the uptake of nutrients by plant roots. The buffers are presently partially vegetated with lawn and an abundance of invasive vegetation, which will be enhanced with implementation of the mitigation plan. Removing the existing lawn and invasive plants and replacing them with native shrubs and trees will aid in improving the water quality in the wetland and downstream, as the native vegetation proposed will densely cover the buffer, providing nutrient uptake functions as well as soil binding functions. Many of the current plants, such as ivy and blackberry, do not have dense fibrous root systems. Dense root systems are important on sloped wetlands and stream/wetland buffers, as they are valuable for soil binding and preventing erosion. A stormwater system on the site will also treat water prior to release to prevent new contaminants from entering the stream system.

b). Stormwater Storage and Groundwater Recharge. The proposed project is not expected to negatively impact this function. City stormwater requirements will be implemented and water from the site detained and slowly released into the stream.

c). Wildlife Habitat. The mitigation project is expected to increase the value of the buffer for wildlife. Though enhancing the adjacent wetland and buffers with trees, shrubs, and groundcover plants, it will significantly increase the vegetation structure and diversity. Through planting a variety of native plants, eventually shrub and forested habitat will be created, resulting in cover and shelter for wildlife where there is presently lawn, ornamental landscaping, or weeds. The plants will also produce berries and seeds, which will result in a food source for wildlife. The project is expected to have a positive effect on wildlife and their habitat in the buffer area.

d). Social Functions. The mitigation project is expected to enhance the appearance of the buffer. The buffer of the wetland is littered with debris, an abandoned house and unmaintained landscaping. After enhancement with native plants, the remaining buffer will be more aesthetically pleasing. The native plants will include native deciduous and evergreen plants, many of which will produce flowers and colorful berries. Signage and fencing will serve to educate property owners of the presence of Critical Areas.

6.0 MITIGATION

The project is proposing a combination of restoration and enhancement of the majority of the wetland and stream buffer areas, as shown on Sheets 3 and 4. All utility, sewer, and stormwater outfall locations be restored, (6,179 sf), full restoration of areas devoid of vegetation (13,760 sf) and the majority of the remaining buffer areas enhanced with specific treatments for areas as needed (49,702 sf).

6.1 Goal, Objectives, and Performance Standards

The following goal, objectives, and performance standards have been established to evaluate and ensure success of the enhancement project.

Goal:

Mitigate for buffer and stream impacts by restoring areas disturbed through utility and stormwater outfall installation, impervious surface removal, and enhancing the remaining degraded wetland and wetland and stream buffer, as shown on Sheet 3. The wetland and buffer enhancement areas will be planted with native trees, shrubs, and groundcover plants to eventually create a forested area in the existing house/lawn area and create a more diverse and less weedy wetland and buffer.

Objective A: Increase the species diversity in the enhancement area.

Performance Standard A: Any plants that die the first year after planting shall be replaced to ensure 100% survival at the end of the first year. For years two through five, at least 8 native planted species shall be present in the enhancement areas.

Objective B: Increase the woody coverage in the enhancement area through planting native shrub and tree species.

Performance Standard B: Woody coverage (sapling and shrub cover) will be at least 60% by the end of the third year after planting and at least 80% cover by the end of the fifth year after planting. Cover may be composed of both planted and native volunteer species, with volunteers not composing more than 30% cover, unless there are desirable planted species thriving in the understory. Cover will not be measured in areas within enhanced areas with an existing forested canopy, in these areas survival and invasive weed coverage will be the performance standards.

Objective C: Remove invasive plants and maintain at no more than 10% cover in the enhancement areas.

Performance Standard C: After construction and following every monitoring event for a period of five years, exotic and invasive plant species will be maintained at levels below 10% total cover in the mitigation areas. These species include those listed on the King County Noxious Weed List.

6.2 Wetland and Buffer Enhancement

An abundance of invasive weeds is present on the property within the areas proposed for enhancement. Himalayan blackberry is present across much of the wetland and wetland and stream buffers, as well as other invasive plants including English ivy, and Japanese knotweed. Prior to planting, these species shall be cut down, their roots shall be grubbed out, and all live plant parts removed from the site. Herbicide applied by a licensed applicator will be needed to

control Japanese knotweed. Heavy equipment shall not be used in the wetland or steeper slopes; work must be done by hand due to fragile wet soils in these areas. Repeated site visits to grub invasive species, will be necessary. Existing lawn areas shall be sheet mulched with cardboard topped with a coarse mulch to suppress weeds and prevent herbaceous plant material from competing with planted species. Following weed removal, native plants will be installed.

Full planting restoration, with groundcover plants, shrubs, and trees will be installed in areas of the buffer devoid of desirable vegetation and where the existing house is located and the road removal area southeast of Mine Hill Creek and Lots 1-3. Groundcover plants and shrubs will be installed over temporary disturbed areas where utilities will be installed. The remaining buffer and wetland areas will have select weed removal and understory planting as appropriate, depending on the presence of desirable species. Proposed planting details are provided on Sheet

The plant species to be included in the mitigation plan will be chosen for a variety of qualities, including adaptation to specific water regimes, value to wildlife, pattern of growth (structural diversity), and aesthetic values. Plants proposed to be installed include those native to the lowlands of western Washington. Plant materials may consist of a combination of bare-root shrubs (during the dormant season) and container plants.

6.3 Habitat Features

Habitat features including snags, brush piles, and large woody debris will be salvaged from cleared portions of the property and placed in the enhancement and restoration areas and will be noted in the final mitigation plan. Larger logs will provide refuge for small mammals or amphibians while contributing to the soil as they decay. Brush piles provide cover for small mammals, as well as birds (such as juncos, wrens, and sparrows), which are particularly attracted to them.

6.4 Temporary Irrigation System

An above ground temporary irrigation must be installed to provide irrigation to upland portions of the mitigation plantings during the dry season. The wetland area has perennial hydrology and is saturated to the surface in summer and does not need irrigation. Irrigation shall be provided in the buffer areas. At a minimum, the system must be operational for the first year following installation. If a significant number of plants die, replacement plantings must also be irrigated for their first year following installation. Mitigation areas shall be irrigated between June 15 (or earlier if needed) and October 15. The irrigation system shall be programmed to provide 1" of water per week.

7.0 MONITORING PROGRAM

Performance monitoring of the mitigation areas will be conducted by a qualified biologist for a period of five years. Monitoring will include assessments of vegetation and wildlife usage, maintenance needs, as well as photo documentation. The results of each monitoring event will be summarized in a report to be submitted to the City. Maintenance reviews will be conducted by a biologist during the spring of each year with monitoring occurring in the fall. A report summarizing both the spring maintenance review and the fall monitoring event will be submitted to the City following the fall monitoring event.

Vegetation

The growth and survival of the vegetation will be evaluated during monitoring events. The percent invasive coverage and survival of planted species will be estimated throughout the entire site. Woody cover will be estimated in the areas that currently lack existing canopy coverage of native vegetation.

Reports

Monitoring reports will include a summary of woody and invasive coverage as well as survival rates of planted material. Observations of wildlife usage will also be noted, such as actual sightings, tracks, songs, calls, or scat. Photographs of the mitigation area will also be included with the report.

Reports will be submitted to the City according to the schedule presented in **Table 1**. If the performance standards for the project are met (**Section 4.1**), monitoring will cease after the fifth year, post-construction.

Table 2: Projected Calendar for Performance Monitoring

Year	Date*	Maintenance Review	Performance Monitoring	Report Due to City
1	Spring	X		
	Fall	X	X	X
2	Spring	X		
	Fall	X	X	X
3	Spring	X		
	Fall	X	X	X
4	Spring	X		
	Fall	X	X	X
5	Spring	X		
	Fall	X	X	X*

*Request project approval from the City (presumes performance criteria are met).

MAINTENANCE (M) and CONTINGENCY (C)

Maintenance will be performed regularly to address any conditions that could jeopardize the success of the mitigation areas. During maintenance reviews by the wetland biologist (schedule shown in **Table 1**), any maintenance items requiring attention will be identified and reported to the property owner.

Established performance standards for the project will be compared to the monitoring results to judge the success of the mitigation project. If there is a significant problem with the mitigation achieving its performance standards, the Bondholder shall work with the City to develop a Contingency Plan. Contingency plans can include, but are not limited to additional plant installation, erosion control, and plant substitutions of type, size, quantity, and location. Such contingency Plan shall be submitted to the City along with annual monitoring reports.

Contingency and maintenance items may include many of the items listed below and would be implemented if performance standards are not met. Maintenance and remedial action on the site will be implemented immediately upon completion of the monitoring event (unless otherwise specifically indicated below).

- During year one, replace all dead plant material. (M)
- Water all plantings at a rate of 1" of water at least every week between June 15 – September 15 during the first year after installation, and for the first year after any replacement plantings. (C & M)
- Replace dead plants with the same species or a substitute species that meets the goal and objectives of the mitigation plan, subject to the approval of the wetland biologist. (C)
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). (C)
- Weed trees and shrubs to the drip line, by hand. Maintain mulch rings around trees and shrubs at a depth of 3 inches. Weeding of mulch rings should occur twice per year until shrubs have become established. Do not use mechanized devices, herbicides, or pesticides adjacent to installed plant material.
- Due to the abundance of invasive weeds on the property, removal of invasive species throughout the site should occur regularly during the growing season. It is anticipated that during the first year, weeding will be required monthly from April through September. If weeding is thoroughly addressed during the first year, weeding may only be necessary during the spring and fall during subsequent years of the monitoring period. Specific maintenance needs will be summarized for the property owner during the spring maintenance review by the wetland biologist. All non-native vegetation must be removed and dumped off site. (M)
- Clean up trash and other debris. (M)
- Selectively thin volunteer species (such as alder) to prevent domination by a single species. (M)

8.0 PERFORMANCE GUARANTEES

A financial surety for the performance and maintenance equal to 150% of the estimated installation, maintenance, monitoring, and contingency costs for the five-year monitoring period shall be posted with the City prior to finalization of the building permit. The bond may be extended if additional work is needed and/or performance criteria are not met.

9.0 REFERENCES

Aquatica Environmental Consulting, LLC. 2018. October. Critical Area Study.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Department of the Interior. FWSOBS-70/31.

Hitchcock, C.L., and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press. 730 pp.

Issaquah, City of. Issaquah Municipal Code. Accessed on-line, September 2019.

APPENDIX A

Critical Area Variance Narrative

CRITERIA:

Issaquah Municipal Code (“IMC”) Section 18.10.430 allows for variances from Critical Areas Regulations if the following criteria are met:

- A. *Applicability: The variance procedures herein apply to all property outside the jurisdiction of the Shoreline Master Program. Variances for development on property located within shoreline jurisdiction shall follow the variance process, standards and criteria listed in the Shoreline Master Program (SMP) and Appendix A of the SMP, Critical Area Regulations.***

Response: The properties included in Mine Hill Road Plat (345, 375 Mine Hill Rd SW), along with the proposed access road connecting to Clark Street, are outside of the jurisdiction of the Shoreline Master Program.

- B. *Purpose: The variance provision is provided to property owners who, due to the strict implementation of this chapter and/or to unusual circumstances regarding the subject property, are deprived of privileges commonly enjoyed by other properties in the same vicinity, zone and under the same land use regulations or have been denied all reasonable use of the property; provided, however, that the fact that surrounding properties have been developed under regulations in force prior to the adoption of this Code shall not be the sole basis for the granting of a variance.***

Response: The variance to allow stormwater outfalls and water and sewer mains within the inner 75% of the Class 2 stream buffer are needed due to the unusual circumstances regarding the subject property.

- The stormwater outfall from the vault cannot feasibly be located to meet the code requirement without causing a safety hazard, undermining the stability of a steep slope that is adjacent to the stream.
- The stormwater outfall adjacent to Mine Hill Rd SW (a public street) is required because there is no feasible alternative to address the stormwater from frontage improvements required by the City, given the topography of the road and that it is already located within the stream buffer.
- Due to the unique topography of the site, and the location of existing public water and sewer mains where utilities serving the plat must connect, the proposed water and sewer mains cannot be placed within the outer 25% of critical areas buffers.

The variance is required to avoid being denied all reasonable use of the property. There are no other feasible alternatives to address stormwater outfalls or provide water/sewer service to the developable areas of the property, regardless of the intensity of the development.

The proposed variance meets the purpose for which the provision was created.

- C. *Variance Granted: Before any variance may be granted, the applicant must file an application with the Permit Center and must demonstrate to the satisfaction of the Hearing Examiner the ability to meet all of the criteria in subsection D of this section. In the event that the applicant is not able to fulfill all of the criteria in subsection D of this section, a demonstration must be made to the satisfaction of the Hearing Examiner, regarding the ability to successfully meet all of the criteria established in subsection E of this section.***

A variance application shall be submitted to the Permit Center along with a critical areas special study, where applicable.

Response: This narrative, along with the supporting plat documents and studies, is written to address the variance criteria, as noted below. The critical areas variance application will be duly filed with these documents, as required by this provision.

D. Variance Criteria Established:

1. The variance is in harmony with the purpose and intent of the relevant City ordinances and the Comprehensive Plan;

Response: The variance is in harmony with the purpose and intent of relevant City ordinances related to subdivisions (IMC 18.13.010) and critical areas regulations (IMC 18.10.360), among others. Some examples:

IMC 18.10.360(A): Protect members of the public and public resources and facilities from injury, loss of life, property damage or financial losses due to flooding erosion, landslides and seismic events, soil subsidence and steep slope failures.

The outfall of the stormwater detention vault would typically be limited to within the outermost 25% of the stream buffer (IMC 18.10.775.F.1). However, the site plans and geotechnical report clearly show that any outfall location in this area would be at the top of a 40% slope, where an outfall could cause erosion, landslides, or other steep slope failures. The outfall must be located at the toe of the slope where this risk can be minimized, but still outside of the Ordinary High-Water mark of the Class 2 stream. This impact cannot be avoided without endangering the public. The disturbance of the buffer and slope will be mitigated with native plantings, in accordance with restoration and enhancement requirements found in IMC 18.10.795.

In addition, the outfall for stormwater collected from the frontage improvements along Mine Hill Rd is located on the downhill portion (northend) of Mine Hill Rd SW, as is required. This portion of the road is already located within the stream buffer and there is no area along the west side of Mine Hill Rd SW that is within the outer 25% of the stream buffer. Nonetheless, the stormwater collection and outfall is necessary to avoid flooding, erosion, and for the safe operation of the public road.

IMC 18.13.010(B): That the public health, safety, general welfare, and aesthetics of the City shall be promoted and protected, complying with the provisions of Chapter 58.17 RCW;

IMC 18.13.010(D): That the proper provisions for all public facilities, including connectivity, circulation, utilities, and services, shall be made;

IMC 18.13.010(E): That maximum advantage of site characteristics shall be taken into consideration;

The development is required to be served by adequate public facilities, including public water and sewer systems.

- The City has requested that a water main that creates a loop through the property between mains on Mine Hill Rd SW and Clark Street – this helps maintain water pressure and provides redundancy for the benefit of the entire community.

- The property slopes down from west to east (towards the Class 2 stream), so the sewer main following the grade to connect to the existing sewer main on Mine Hill Rd SW is necessary for new homes to have gravity connections. This is the best outcome for operation of the City's sewer system.

The path of the sewer and water mains through the critical area buffer follows the path of an existing access road that already bisects the critical area and crosses the Class 2 stream. The access road will be removed (with the exception of a City easement to maintain stormwater access to the stream) and replaced with a pedestrian trail and buffer enhancement. This is an elegant solution that takes full advantage of the existing site characteristics (topography, existing infrastructure), minimizes impacts, dovetails with the creation of a new amenity, and provides for the safe and effective operation of these essential public utilities.

Accordingly, this criterion has been met.

2. *The variance shall not constitute a grant of special privilege which would be inconsistent with the permitted uses, or other properties in the vicinity and zone in which the subject property is located;*

The variance does not grant a special privilege that is inconsistent with permitted uses either on this property, or other properties nearby. The proposed plat includes the permitted use of single-family detached and attached homes, which is an allowed use in the SF-S zone (See IMC 18.06.130).

This criterion has been met.

3. *That such variance is necessary, because of special circumstances relating to the size, shape, topography, location or surroundings of the subject property, to provide it with use rights and privileges permitted to other properties in the vicinity, located in the same zone as the subject property and developed under the same land use regulations as the subject property requesting the variance;*

As noted in Section D.1, this variance is necessary because of the existing topography, location and type of critical areas (steep slopes, stream), and location of existing public utility mains and roads. These factors (safety, function of public utility systems, etc.) necessitate the location of the water and sewer mains and stormwater outfalls to be in the proposed locations in order to allow for the property to be reasonably developed. The proposed development is in keeping with the use rights and privileges afforded to other similarly-situated properties in the vicinity.

It should be noted that the public right of way proposed within the development, along with the utility mains that are part of this subject variance, will connect to adjacent property to the south. This will allow the provision for water and sewer service for future development without the need for similar variance.

This criterion has been met.

4. *That the granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and zone in which the subject property is situated;*

The variance will not be materially detrimental or injurious to either the subject property or improvements in the vicinity. In contrast, the looping of the water main through the critical area, and placement of the stormwater outfalls below the toe of a steep slope and adjacent to the existing road, respectively, enhances safety both on the property and in the vicinity of the property. The placement of the sewer main will maintain a gravity connection, which is safer and more reliable and pump systems, and avoid undue burden upon the City's utility.

This criterion has been met.

5. That alternative development concepts that comply with the Code provisions to which the variance is requested have been evaluated, and that undue hardship would result if the strict adherence to the Code provisions were required;

Yes, these options have been evaluated, and the proposed alignment of the stormwater outfalls and utility mains is the consensus recommendation of City staff, the City's consultants, and the applicant's consultants. There is no feasible alternative that strictly adheres to the Code requirements that would not otherwise compromise safety or cause an undue hardship.

This criterion has been met.

6. The variance granted is the minimum amount that will comply with the criteria listed above and the minimum necessary to accommodate the permitted uses proposed by the application, and the scale of the use shall be reduced as necessary to meet this requirement; and

The variance is the minimum necessary, and would cause the least amount of disturbance necessary, to provide for a safe stormwater outfall and adequate utilities to serve the plat.

- Moving the stormwater vault and outfall further uphill (which would reduce buildable area) would not solve the core problem of the outfall placing significant surface water on top of a steep slope.
- For the other stormwater outfall (adjacent to Mine Hill Rd), the only area possible for a discharge point is near the stream culvert because the existing public road itself encroaches significantly into the stream buffer.
- We evaluated moving the water and sewer mains towards the north property line (and away from following the existing driveway path), but found that this option would remove several significant trees, and encroach into the stream buffer the same amount as the proposed path. A portion of the driveway, regardless of the alignment of the water and sewer mains, would have to remain as the City has a stormwater easement adjacent to the stream and relies on this path to maintain the culvert inlet.

This criterion has been met.

7. The need for the variance is not the result of actions of the applicant or property owner.

The variance is necessary because of preexisting conditions or development patterns that are outside of the control of the applicant/property owners.

The City has installed and maintained the public water and sewer systems, extending these services to the subject properties and surrounding properties. The method of

connecting to these preexisting systems, along with sound engineering, safety, and maintenance practices (looping the water main, providing gravity sewer connection), is a “puzzle piece” for every development. In this case, the “puzzle piece” needed for a reasonable development on this property to connect to these utility systems requires a variance.

In addition, Mine Hill Rd SW, which encroaches significantly into the Class 2 stream buffer, is a public street. The City installed and maintains the culvert that connects to the Class 2 stream and goes under Mine Hill Rd SW. The ROW dedication and frontage improvements required by the City necessitates the stormwater outfall in the stream buffer because of the preexisting alignment of the road.

Further, the topography of this property is a result of natural processes. While there has been some minor development/grading on the property in the past (three existing single-family homes), the need for a variance for the stormwater vault outfall is related to steep slopes adjacent to the stream that can be readily observed on this property and surrounding property.

This criterion has been met.

E. Reasonable Use Variance Criteria Established: Only after the determination, by the Hearing Examiner, that the proposal does not meet all of the variance criteria listed above, may the application be reviewed, by the Hearing Examiner at the same public hearing, under the following criteria:

- 1. There is no reasonable use of the property left; and***
- 2. That the granting of this variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and zone in which the subject property is situated; and***
- 3. The variance granted is the minimum amount that will comply with the criteria listed above and the minimum necessary to accommodate the permitted uses proposed by the application, and the scale of the use shall be reduced as necessary to meet this requirement; and***
- 4. The need for the variance is not the result of actions of the applicant or property owner.***

With the discussion provided above, we believe the variance criteria under Section D have been met.

F. Wetland Buffer Variance: The Hearing Examiner may reduce wetland buffer widths beyond requirements of IMC 18.10.650 only through review and approval of a variance application. In addition to the variance requirements the applicant must demonstrate that:

- 1. No direct or indirect, short-term or long-term, adverse impacts to wetlands would result from the proposed buffer reduction; and***
- 2. The project includes a wetland and/or wetland buffer enhancement plan using native vegetation which demonstrates that an enhanced buffer will improve the functional attributes of the buffer to provide additional protection for wetlands functions and values and that the new buffer will provide the same level of protection to the wetland as the original buffer.***

This does not apply.

- G. Cumulative Impact of Area Wide Requests: In the granting of variances from this Code, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example, if variances were granted to other developments in the area where similar circumstances exist, the total of the variances should also remain consistent with the policies and intent set forth in this chapter.***

Understood. We believe the proposed variance reduces the likelihood that properties to the south (which will be served by the public road and utilities in this proposed development) will require a variance.

- H. Public Hearing: The Hearing Examiner shall hold a public hearing and notice shall be provided under the provisions of the Land Use Code and Issaquah Municipal Code. The applicant or representative(s) shall appear in person at the hearing.***
- I. Notice of Hearing Examiner's Decision: Copies of the Hearing Examiner's decision shall be mailed to the applicant and to other parties of record not later than three (3) working days following the filing of the decision. "Parties of record" shall include the applicant and all other persons who specifically request notice of the decision by signing a register provided for such purpose at the public hearing.***
- J. Appeals: Decisions by the Hearing Examiner may be appealed to the City Council in accordance with IMC 18.04.250, Administrative appeals. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.10, 1996).***


Understood and acknowledged.

CONCLUSION:

Based on the foregoing discussion and demonstration in the enclosed documents that the criteria related to a variance been satisfied, we respectfully request that the City of Issaquah grant a critical areas variance from IMC 18.10.775.F.1 for the location of the water and sewer utility mains and stormwater outfalls within the Mine Hill Road Plat.

APPENDIX B

Bond Quantity Worksheet



Department of Permitting and
Environmental Review
35030 SE Douglas Str, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

Critical Areas Mitigation
Bond Quantity Worksheet

C24 09/09/2015
Is-wks-sensareaBQ.xls
Is-wks-sensareaBQ.pdf

Mine Hill

Date: 29-Jun-20 Prepared by: T.Opolka

Project Description:

Location: 375 Mine Hill

Applicant:

Phone:

PLANT MATERIALS (includes labor cost for
plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	\$5.00	Each			\$ -
PLANTS: Container, 1 gallon, medium soil	\$11.50	Each	5599.00		\$ 64,388.50
PLANTS: Container, 2 gallon, medium soil	\$20.00	Each	433.00		\$ 8,660.00
PLANTS: Container, 5 gallon, medium soil	\$36.00	Each			\$ -
PLANTS: Seeding, by hand	\$0.50	SY			\$ -
PLANTS: Slips (willow, red-osier)	\$2.00	Each			\$ -
PLANTS: Stakes (willow)	\$2.00	Each			\$ -
PLANTS: Stakes (willow)	\$2.00	Each			\$ -
PLANTS: Flats/plugs	\$2.00	Each			\$ -
TOTAL					\$ 73,048.50

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	\$37.88	CY			\$ -
Decompacting till/hardpan, medium, to 6" depth	\$1.57	CY			\$ -
Decompacting till/hardpan, medium, to 12" depth (trail)	\$1.57	CY	219.00		\$ 343.83
Hydroseeding	\$0.51	SY			\$ -
Labor, general (landscaping other than plant installation)	\$40.00	HR			\$ -
Labor, general (construction)	\$40.00	HR			\$ -
Labor: Consultant, supervising	\$55.00	HR	24.00		\$ 1,320.00
Labor: Consultant, on-site re-design	\$95.00	HR			\$ -
Rental of decompacting machinery & operator	\$70.00	HR			\$ -
Sand, coarse builder's, delivered and spread	\$42.00	CY			\$ -
Staking material (set per tree)	\$7.00	Each			\$ -
Surveying, line & grade	\$250.00	HR			\$ -
Surveying, topographical	\$250.00	HR			\$ -
Watering, 1" of water, 50' soaker hose	\$3.62	MSF			\$ -
Irrigation - temporary	\$3,000.00	Acre	1.30		\$ 3,900.00
Irrigation - buried	\$4,500.00	Acre			\$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	\$1.02	SY			\$ -
TOTAL					\$ 5,563.83

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	\$ 2.00	Each			\$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	\$1,000.00	Each			\$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30' salvaged- on site	\$50.00	Each	10.00		\$ 500.00
Logs, w/o root wads, 16"-24" diam., 30' long	\$245.00	Each			\$ -
Logs w/ root wads, 16"-24" diam., 30' long	\$460.00	Each			\$ -
Rocks, one-man	\$60.00	Each			\$ -
Rocks, two-man	\$120.00	Each			\$ -
Root wads salvaged on site	\$50.00	Each	5.00		\$ 250.00
Spawning gravel, type A	\$22.00	CY			\$ -
Weir - log	\$1,500.00	Each			\$ -
Weir - adjustable	\$2,000.00	Each			\$ -
Woody debris, large	\$163.00	Each			\$ -
Snags - anchored	\$400.00	Each			\$ -
Snags - on site	\$50.00	Each			\$ -
Snags - imported	\$800.00	Each			\$ -
* All costs include delivery and installation					\$ 750.00

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	\$ 4.89	CY			\$ -
Crushed surfacing, 1 1/4" minus	\$30.00	CY			\$ -
Ditching	\$7.03	CY			\$ -
Excavation, bulk	\$4.00	CY			\$ -
Fence, silt	\$1.60	LF	1647.00		\$ 2,635.20
Jute Mesh	\$1.26	SY			\$ -
Mulch, by hand, straw, 2" deep	\$1.27	SY			\$ -
Mulch, by hand, wood chips, 4" deep	\$3.25	SY	2104.00		\$ 6,838.00
Mulch, by machine, straw, 1" deep	\$0.32	SY			\$ -
Piping, temporary, CPP, 6"	\$9.30	LF			\$ -
Piping, temporary, CPP, 8"	\$14.00	LF			\$ -
Piping, temporary, CPP, 12"	\$18.00	LF			\$ -
Plastic covering, 6mm thick, sandbagged	\$2.00	SY			\$ -
Rip Rap, machine placed, slopes	\$33.98	CY			\$ -
Rock Constr. Entrance 100'x15'x1'	\$3,000.00	Each			\$ -
Rock Constr. Entrance 50'x15'x1'	\$1,500.00	Each			\$ -
Sediment pond riser assembly	\$1,695.11	Each			\$ -
Sediment trap, 5' high berm	\$15.57	LF			\$ -
Sediment trap, 5' high berm w/spillway incl. riprap	\$59.60	LF			\$ -
Sodding, 1" deep, level ground	\$5.24	SY			\$ -
Sodding, 1" deep, sloped ground	\$6.48	SY			\$ -
Straw bales, place and remove	\$600.00	TON			\$ -
Hauling and disposal	\$20.00	CY			\$ -
Topsoil, salvaged	\$10.00	CY	98.00		\$ 980.00
TOTAL					\$ 10,453.20

GENERAL ITEMS					
ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	\$18.89	LF			\$ -
Fencing, chain link, corner posts	\$111.17	Each			\$ -
Fencing, chain link, gate	\$277.63	Each			\$ -
Fencing, split rail, 3' high (2-rail)	\$10.54	LF	1647.00		\$ 17,359.38
Fencing, temporary (NGPE)	\$1.20	LF	1647.00		\$ 1,976.40
Signs, sensitive area boundary (inc. backing, post, install)	\$28.50	Each	21.00		\$ 598.50
				TOTAL	\$ 19,934.28
OTHER			(Construction Cost Subtotal)		\$ 109,749.81
ITEMS	Percentage of Construction Cost	Unit			Cost
Mobilization	10%	1			\$ 10,974.98
Contingency	30%	1			\$ 32,924.94
				TOTAL	\$ 43,899.92
MAINTENANCE AND MONITORING					
NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintenance ranges may be assessed anywhere from 5 to 10 years.					
Maintenance, annual (by owner or consultant)					
Less than 1,000 sq.ft. and buffer mitigation only	\$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	\$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	\$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	\$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	\$ 180.00	EACH		(4hr @\$45/hr)	\$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	\$ 270.00	EACH		(6hr @\$45/hr)	\$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	\$ 360.00	EACH		(8 hrs @ 45/hr)	\$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	\$ 450.00	EACH		(10 hrs @ \$45/hr)	\$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	\$ 1,600.00	DAY	5.00	(WEC crew)	\$ 8,000.00
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	\$ 2,000.00	DAY		(1.25 X WEC crew)	\$ -
Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	\$ 720.00	EACH		(8 hrs @ 90/hr)	\$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	\$ 900.00	EACH		(10 hrs @ \$90/hr)	\$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	\$ 1,440.00	DAY	5.00	(16 hrs @ \$90/hr)	\$ 7,200.00
Larger than 5 acres - buffer and / or wetland or aquatic area impacts	\$ 2,160.00	DAY		(24 hrs @ \$90/hr)	\$ -
				TOTAL	\$ 15,200.00
				Total	\$168,849.73